Author index

Aach, H. 333
Abe, H. 418
Ádám, A.L. 240
Ainsworth, C. 1
Algarra, P. 592
Andrews, T.J. 352
Apel, K. 490
ap Rees, T. 313, 435
Arad, S. 219
Armstrong, G. 490
Atzorn, R. 156

Badger, M.R. 352, 597
Baldet, P. 352
Barak, Z. 219
Barna, B. 240
Baskin, T.I. 514
Beerhues, L. 608
Benhamou, N. 89
Berger, U. 608
Bestwick, C.S. 240
Białek, U. 184
Binzel, M.L. 563
Bismuth, E. 324
Bisseling, T. 184
Bivens, N.J. 514
Björkman, O. 646
Boccalandro, H. 213
Boller, T. 250
Böse, G. 333
Bouché-Pillon, S. 76
Boylan, M. 225
Bregante, M. 193
Brückner, C. 156
Büchel, C. 69
Burrell, M. 1
Bush, D.S. 19

Caboche, M. 142, 203
Campbell, D. 176, 553
Carol, P. 414
Casal, J.J. 213, 225
Cerdá-Olmedo, E. 63
Chandler, P.M. 39
Chipman, D.M. 219
Chourey, P.S. 522
Chua, N.-H. 103
Clark, G.B. 377
Clarke, A.K. 553
Cordonnier-Pratt, M.-M. 203
Coupe, S.A. 442
Creissen, G.P. 422
Crétin, C. 324
Croteau, R. 49
Cruz-Hernández, A. 569

De Block, M. 619
De Sonville, A. 619
Debrouwer, D. 619
Decottignies, P. 324
del Rio, M.J. 272
Denyer, K. 57
Devos, K.M. 1
Dong, X.-J. 257
Dreyer, L. 193
Dubois, F. 324
Dumas, C. 641
Dunlap, J.R. 563

Elzenga, J.T.M. 127
Emmler, K. 103
Epelbaum, S. 219
Ezura, H. 301

Falkner, G. 147
Falkner, R. 147
Fisher, S.A. 501
Flach, J. 370
Foster, J. 57
Freedman, R.B. 465
Frey, B. 400
Freydl, E. 250
Fromont, J.C. 76
Fukazawa, K. 418
Fukshansky, L. 63
Funada, R. 418

Gadal, P. 324
Gale, M.D. 1
Gallardo, F. 324
Galun, E. 118
Galvez, S. 324
Gambale, F. 193
Garab, G. 69
Gilmore, A.M. 646
Glogau, U. 613
Gómez-Lim, M.A. 569
Graebe, J.E. 333
Greer, D.H. 31
Greiner, H. 63
Greulich, K.O. 278
Grimm, E. 11
Grube, A. 11
Grusak, M.A. 111
Guex, N. 370
Guo, Z. 627
Gustafsson, P. 553
Gustavsson, H.-O. 264

Haas, C.J. 377
Habash, D.Z. 482
Harberd, N.P. 301, 414
Hartley, M.R. 633
Hatch, M.D. 386
Hatzfeld, W.-D. 296
Hauser, B. 203
Heber, U. 448
Hedrich, R. 193, 546, 655
Hejnowicz, Z. 393
Henry, H. 370
Herbst, R. 592
Higgins, T.J.V. 501
Hill, S.A. 313
Hirasawa, T. 411
Horton, P. 306, 475
Hosein, F. 1
Houshmand, H. 84

Imaizumi, H. 418

Jackson, J.A. 233
Jahnke, S. 11
Jamai, A. 76
Jenkins, G.I. 233
Jones, D.L. 672

Kapaun, E. 577
Kermode, A.R. 501
Keryer, E. 324
Keys, A.J. 482
Klaucke, A. 163
Kochian, L.V. 672
Kraepiel, Y. 142
Krause, G.H. 583
Kreimer, G. 343
Kreuger, M. 135

Lafontaine, P.J. 89
Landstein, D. 219
Lawlor, D.W. 482
Lebedev, N. 490
Leduc, N. 641
Lehmann, J. 156
Leitz, G. 278
Lemoine, R. 76
Leopold, J. 156
Linden, L. 343
Lohse, G. 546
Lucas, W.J. 118
Lunn, J.E. 386
Luwe, M. 448
Lyne, R.L. 435

Maathuis, F.J.M. 456
Mansfield, J.W. 240
Marrec, K. 142
Martín-Rojas, V. 63
Massiah, A.J. 633
Mätschke, M. 613
Matthys-Rochon, E. 641
McCaskill, D. 49
Meijer, J. 84
Meins, F. Jr 250
Mendgen, K. 535
Miginiac, E. 142
Miginiac-Maslow, M. 324
Miller, M.E. 522
Moesinger, E. 296
Mogensen, H.L. 641
Müller, P. 163
Mullineaux, P.M. 422

Nagai, R. 257
Napier, J.A. 200
Napier, R.M. 465
Neuhaus, J.-M. 250
Neumann, S. 11
Nieländer, U. 528

Ohtani, J. 418
Olesinski, A.A. 118
Oliver, S.C. 465
Öquist, G. 176, 553
Ottander, C. 176

Palmqvist, K. 352
Parry, M.A.J. 482
Parthier, B. 156
Paul, M.J. 482
Peng, J. 414
Polishchuk, E. 501
Pratt, L.H. 203
Price, G.D. 597
Prins, H.B.A. 127

Quail, P.H. 225

Ramazanov, Z. 272
Rask, L. 264
Reinbothe, S. 156
Reisser, W. 577
Richter, A. 427
Richter, H. 370
Roberts, J.A. 442
Rödin, J. 264
Rodríguez-Gálvez, E. 535
Roux, S.J. 377
Rubio, J. 272
Runge, S. 490

Salmon, S. 76
Sánchez, R.A. 225
Sandberg, M. 84
Sanders, D. 456
Sangwan, R.S. 324
Sangwan-Norreel, B. 324
Schäfer, E. 103
Scheidegger, C. 400
Scheuerlein, R. 377
Schnepf, E. 278
Schroeter, B. 400
Schulz-Lessdorf, B. 655
Scott, P. 435
Shaff, J.E. 672
Shewry, P.R. 200
Shiraiwa, Y. 272
Sievers, A. 393
Sjödahl, S. 264
Skorupska, A. 184
Smith, A.M. 57
Smith, M.A. 200
Sondag, C. 393
Sotta, B. 142
Spencer, D. 501
Stark, A. 84
Stobart, A.K. 200
Stockhaus, J. 103
Stöhr, C. 613
Suge, H. 411
Sültemeyer, D. 352, 597

Takagi, S. 257
Takahashi, H.-d. 411
Takano, M. 411
Tanaka, I. 289
Tarvis, M. 1
Taylor, J.E. 442
Thümmler, F. 592
Tirlapur, U.K. 377
Tischner, R. 613

Author index

Aach, H. 333
Abe, H. 418
Ádám, A.L. 240
Ainsworth, C. 1
Algarra, P. 592
Andrews, T.J. 352
Apel, K. 490
ap Rees, T. 313, 435
Arad, S. 219
Armstrong, G. 490
Atzorn, R. 156

Badger, M.R. 352, 597
Baldet, P. 352
Barak, Z. 219
Barna, B. 240
Baskin, T.I. 514
Beerhues, L. 608
Benhamou, N. 89
Berger, U. 608
Bestwick, C.S. 240
Białek, U. 184
Binzel, M.L. 563
Bismuth, E. 324
Bisseling, T. 184
Bivens, N.J. 514
Björkman, O. 646
Boccalandro, H. 213
Boller, T. 250
Böse, G. 333
Bouché-Pillon, S. 76
Boylan, M. 225
Bregante, M. 193
Brückner, C. 156
Büchel, C. 69
Burrell, M. 1
Bush, D.S. 19

Caboche, M. 142, 203
Campbell, D. 176, 553
Carol, P. 414
Casal, J.J. 213, 225
Cerdá-Olmedo, E. 63
Chandler, P.M. 39
Chipman, D.M. 219
Chourey, P.S. 522
Chua, N.-H. 103
Clark, G.B. 377
Clarke, A.K. 553
Cordonnier-Pratt, M.-M. 203
Coupe, S.A. 442
Creissen, G.P. 422
Crétin, C. 324
Croteau, R. 49
Cruz-Hernández, A. 569

De Block, M. 619
De Sonville, A. 619
Debrouwer, D. 619
Decottignies, P. 324
del Rio, M.J. 272
Denyer, K. 57
Devos, K.M. 1
Dong, X.-J. 257
Dreyer, L. 193
Dubois, F. 324
Dumas, C. 641
Dunlap, J.R. 563

Elzenga, J.T.M. 127
Emmler, K. 103
Epelbaum, S. 219
Ezura, H. 301

Falkner, G. 147
Falkner, R. 147
Fisher, S.A. 501
Flach, J. 370
Foster, J. 57
Freedman, R.B. 465
Frey, B. 400
Freydl, E. 250
Fromont, J.C. 76
Fukazawa, K. 418
Fukshansky, L. 63
Funada, R. 418

Gadal, P. 324
Gale, M.D. 1
Gallardo, F. 324
Galun, E. 118
Galvez, S. 324
Gambale, F. 193
Garab, G. 69
Gilmore, A.M. 646
Glogau, U. 613
Gómez-Lim, M.A. 569
Graebe, J.E. 333
Greer, D.H. 31
Greiner, H. 63
Greulich, K.O. 278
Grimm, E. 11
Grube, A. 11
Grusak, M.A. 111
Guex, N. 370
Guo, Z. 627
Gustafsson, P. 553
Gustavsson, H.-O. 264

Haas, C.J. 377
Habash, D.Z. 482
Harberd, N.P. 301, 414
Hartley, M.R. 633
Hatch, M.D. 386
Hatzfeld, W.-D. 296
Hauser, B. 203
Heber, U. 448
Hedrich, R. 193, 546, 655
Hejnowicz, Z. 393
Henry, H. 370
Herbst, R. 592
Higgins, T.J.V. 501
Hill, S.A. 313
Hirasawa, T. 411
Horton, P. 306, 475
Hosein, F. 1
Houshmand, H. 84

Imaizumi, H. 418

Jackson, J.A. 233
Jahnke, S. 11
Jamai, A. 76
Jenkins, G.I. 233
Jones, D.L. 672

Kapaun, E. 577
Kermode, A.R. 501
Keryer, E. 324
Keys, A.J. 482
Klaucke, A. 163
Kochian, L.V. 672
Kraepiel, Y. 142
Krause, G.H. 583
Kreimer, G. 343
Kreuger, M. 135

Lafontaine, P.J. 89
Landstein, D. 219
Lawlor, D.W. 482
Lebedev, N. 490
Leduc, N. 641
Lehmann, J. 156
Leitz, G. 278
Lemoine, R. 76
Leopold, J. 156
Linden, L. 343
Lohse, G. 546
Lucas, W.J. 118
Lunn, J.E. 386
Luwe, M. 448
Lyne, R.L. 435

Maathuis, F.J.M. 456
Mansfield, J.W. 240
Marrec, K. 142
Martín-Rojas, V. 63
Massiah, A.J. 633
Mätschke, M. 613
Matthys-Rochon, E. 641
McCaskill, D. 49
Meijer, J. 84
Meins, F. Jr 250
Mendgen, K. 535
Miginiac, E. 142
Miginiac-Maslow, M. 324
Miller, M.E. 522
Moesinger, E. 296
Mogensen, H.L. 641
Müller, P. 163
Mullineaux, P.M. 422

Nagai, R. 257
Napier, J.A. 200
Napier, R.M. 465
Neuhaus, J.-M. 250
Neumann, S. 11
Nieländer, U. 528

Ohtani, J. 418
Olesinski, A.A. 118
Oliver, S.C. 465
Öquist, G. 176, 553
Ottander, C. 176

Palmqvist, K. 352
Parry, M.A.J. 482
Parthier, B. 156
Paul, M.J. 482
Peng, J. 414
Polishchuk, E. 501
Pratt, L.H. 203
Price, G.D. 597
Prins, H.B.A. 127

Quail, P.H. 225

Ramazanov, Z. 272
Rask, L. 264
Reinbothe, S. 156
Reisser, W. 577
Richter, A. 427
Richter, H. 370
Roberts, J.A. 442
Rödin, J. 264
Rodríguez-Gálvez, E. 535
Roux, S.J. 377
Rubio, J. 272
Runge, S. 490

Salmon, S. 76
Sánchez, R.A. 225
Sandberg, M. 84
Sanders, D. 456
Sangwan, R.S. 324
Sangwan-Norreel, B. 324
Schäfer, E. 103
Scheidegger, C. 400
Scheuerlein, R. 377
Schnepf, E. 278
Schroeter, B. 400
Schulz-Lessdorf, B. 655
Scott, P. 435
Shaff, J.E. 672
Shewry, P.R. 200
Shiraiwa, Y. 272
Sievers, A. 393
Sjödahl, S. 264
Skorupska, A. 184
Smith, A.M. 57
Smith, M.A. 200
Sondag, C. 393
Sotta, B. 142
Spencer, D. 501
Stark, A. 84
Stobart, A.K. 200
Stockhaus, J. 103
Stöhr, C. 613
Suge, H. 411
Sültemeyer, D. 352, 597

Takagi, S. 257
Takahashi, H.-d. 411
Takano, M. 411
Tanaka, I. 289
Tarvis, M. 1
Taylor, J.E. 442
Thümmler, F. 592
Tirlapur, U.K. 377
Tischner, R. 613

Trebacz, K. 393
Turnwald, S. 377

Ueda, K. 289
Ullrich, A. 592

van Cleve, B. 490
van Holst, G.-J. 135
Van Lammeren, A.A.M. 184
Van Volkenburgh, E. 127
Venis, M.A. 465
Vierstra, R.D. 225
Virgo, A. 583
von der Mark, K. 377
von Kampen, J. 528

Wagner, F. 147
Wagner, G.J. 627
Wagner, T. 63
Walters, R.G. 306, 475
Wandelt, C. 501
Wanek, W. 427
Wang, T. 19
Wasternack, C. 156
Wegel, E. 163
Weir, F. 1
Wettern, M. 528
Widmer, F. 370
Winter, K. 583
Wolf, S. 118

Yang, W.-C. 184
Yu, J.-W. 597

Zwar, J.A. 39

Subject index

cis-abienol 627, 630 ff
Abies sachalinensis 418, 420
abiotic stresses 427
abscisic acid 156 ff, 269, 271, 366, 469, 472, 563 ff
– – deficient mutant 563 ff
abscission, ethylene-promoted 442 ff
Acer vacuoles 662
Acetabularia 128
acetate 52, 53, 55
acetazolamide 354 ff
acetohydroxy acid synthase 219 ff
acetyl-CoA 49, 52 ff, 84
N-acetyl-glucosamine 579
acetylene reduction 163, 167, 168, 172, 185
acidic phosphatase 78
actin 278, 282, 284, 287
– filaments 278, 279, 282, 284, 285, 287, 392, 397
– inhibitor 278, 279, 287
Actinidia deliciosa 37
actinomycin-D 516, 517
active oxygen species 240 ff
actomyosin 514 ff
– system 278, 284
adaption to phosphate fluctuations 147, 151
adenosine diphosphate glucose pyrophosphorylase genes 1 ff
adenosine 5′-diphosphoglucose pyrophosphorylase 57 ff, 522 ff
S-adenosyl-L-homocysteine 427, 430 ff
S-adenosyl-L-methionine 427, 428, 430 ff
adenylate kinase 646, 649, 653
Adiantum 262, 263
– *capillus-veneris* 383
ADPglucose-glucosyl transferase 523
Aegialitis annulata 646 ff
agarose-bathophenanthrolinedisulfonic acid technique 113
ageotropum mutant of *Pisum* 410 ff
Agrobacterium tumefaciens infection 326, 529
Agrobacterium-mediated transformation 105
albina mutants 498
alcohol dehydrogenase 338 ff
aleurone 39, 40, 46
– cells 19 ff
alga(e), chlorophycean 577, 581
– chlorophyll c-containing 69 ff
– eukaryotic 153
– green 69, 73, 74, 219, 220, 262 ff, 272 ff, 278, 343 ff, 352 ff, 399 ff, 528, 533
– unicellular 613, 614, 616
alkaline inorganic pyrophosphatase 60
– phosphatase 163, 164, 166, 167, 171
Allium cepa 668
Alocasia macrorrhiza 36
Alternaria alternata 609
alternative oxidase 569 ff
aluminium 672 ff
– sulfate 514, 516
Amaranthus edulis 385, 387 ff
amino sugar(s) 577, 581
N-(6-aminohexyl)-5-chloro-1-naphthalenesulfonamide hydrochloride 655, 664 ff
δ-aminolevulinic acid 490, 492 ff
5-aminolevulinic acid 575
4-aminopyridine 456, 460
amitrole 11, 14, 15, 17
ammonium 619 ff
α-amylase production 39 ff
amyloplast(s) 522 ff
Anabaena 6, 7, 9
Anacardium 585 ff
– *excelsum* 584, 587, 588, 590
Anacystis nidulans 147 ff
anchorin CII 376, 378, 381, 383
Anemarrhena asphodeloides 608
Anemia phyllitidis 376 ff
anion channel 546 ff
annexin-like proteins 376 ff
antheraxanthin 177, 180, 181, 588, 647 ff
anthocyanin 233, 236, 237
antibody, monoclonal 135, 137, 138, 140, 465 ff
– production 369 ff
antioxidative defense systems 449, 454
Antirrhoea 585, 586, 588
– *trichantha* 584, 588
aphidicolin 514, 516
Apium graveolens 76 ff
apoplasm 448 ff
Arabidopsis 37, 61, 103, 104, 109, 127, 128, 132, 133, 142, 145, 182, 231, 442, 443, 616, 622, 625
– *ga-1* mutant 47
– *gai* mutation 414 ff
– *hy4* mutant 233 ff
– mutant(s) 1, 232, 301 ff, 522
– phytochrome B 203 ff
– *thaliana* 157, 198, 213 ff, 225, 301 ff, 306 ff, 334, 340, 414 ff, 445, 446, 456 ff, 475 ff, 490 ff, 514 ff, 569 ff, 592, 638
arabinogalactan(s) 535 ff
– protein 135 ff
L-arabinose 137, 140
Arbutus unedo 583
argenteum mutant 127, 129, 130, 134
Artemia salina 637, 639
ascomycetes, lichen-forming 399, 400
ascorbate 448 ff
– glutathione cycle/pathway 422, 448, 451, 454
aspartate 621, 622
ATP synthase 147
ATPase 20 ff, 646 ff
atranorine 407
atrazine 11, 14, 259
Atriplex 127
– *spongiosa* 385, 387 ff
autospore(s) 219 ff
auxin(s) 142 ff, 193, 194, 197, 198, 301, 304, 305, 362, 366, 367, 465, 466, 469 ff, 546 ff
– binding protein 465 ff
Avena 45
– phytochrome A 225 ff

Ba^{2+} 127, 129 ff, 456, 459, 460, 663, 667
bacteroid development 184 ff
bar gene 619, 622, 623, 625
Basta herbicide 619, 622 ff
benzoic acid 469, 470
N^6-benzyladenine 144
Beta vulgaris 655 ff
– – *conditiva* 668
bicarbonate transport 597 ff
blue light 63, 65 ff, 233 ff, 475 ff
– – photoreceptors 213, 214, 217
– – stimulation 613 ff
Boltzmann equation 658
Bombyx larvae 362
D-bornesitol 431, 432
Botrytis cinerea 609
Bradyrhizobium japonicum 163 ff, 364, 365
branched-chain amino acids 219 ff
Brassica 294
– *napus* 156, 264 ff, 435, 443, 445, 446, 619 ff
– *oleracea* 435
brefeldin A 514, 517 ff
bromocresol purple 623
bromoxynil 11, 14, 15, 17
butanedione monoxime 514, 517 ff

C_3 dicotyledonous plant 324 ff
– plants 359, 385 ff, 590
C_4 monocotyledon 324 ff
– plants 385 ff
C_3-C_4 photosynthesis 324, 329, 331
^{11}C-photoassimilate translocation 13
^{11}C-technique 11
C-terminal processing 250 ff
Ca^{2+} 193, 196 ff, 547, 548, 550, 551
– channels 344
– influx 672, 674 ff
– /nH^+ antiporters 20, 22, 25, 27, 28
caffeine 514, 516
Cajanus cajan 433
calcium 343 ff, 376, 378, 379, 383, 514, 516, 655 ff, 672 ff
– efflux transporters 19 ff
– ionophores 613, 616, 617
callose 16, 89, 98, 101
– deposition 163, 171, 535 ff
callus 301 ff
– formation 142, 144, 145, 301
calmidazolium hydrochloride 655, 665, 667
calmodulin 19, 20, 24 ff, 343, 347, 349
– antagonists 613, 616, 617, 655, 656, 664 ff
– inhibitors 655 ff
Calophyllum 586
– *longifolium* 586
calreticulin 472
Candida tropicalis 373
carbohydrate(s) 385 ff
– diurnal accumulation 387, 388, 390
– metabolism 313 ff
carbon assimilation 483, 485
– fixation 482, 483, 488, 489
– – pathway 324
– inorganic 597 ff
– metabolism 118 ff, 482 ff
– source 619, 621, 622, 624, 625
carbonic anhydrase(s) 272 ff, 352 ff, 597 ff
carbonyl cyanide *m*-chlorophenylhydrazone 79 ff, 129, 132, 133
– – *p*-trifluoromethoxyphenylhydrazone 22 ff
α-carotene 180, 181, 583, 588, 590
δ-carotene 180, 588, 590
carotenoid(s) 49, 50, 176, 177, 180, 181, 307, 309, 310, 590
– biosynthesis 53
caryophyllene 52, 53
Castilla 585, 586, 588, 589
– *elastica* 584, 585, 588, 590
catalase 240, 241, 245 ff

cauliflower mosaic virus 501, 504, 512
– – – 35S promoter 231, 324, 327, 329
cavitation 406, 407
cell cycle 219 ff, 528 ff
– differentiation in nodules 163 ff
– division 219 ff
– expansion 514, 519
– wall 89, 90, 92, 94, 96, 98, 100, 101
– – of *Chlorella* 577 ff
– – synthesis 535 ff
cell-cell interaction 135
cellulose 89, 92, 96, 100, 101, 578 ff
– microfibrils 418, 420, 421
cembratrienediols 630
Centaurium erythraea 608 ff
– *littorale* 608 ff
Ceratodon purpureus 592
chalcone isomerase 236, 237
– synthase 157, 236, 237
channel interaction with calmodulin inhibitors 655 ff
chaperone(s) 466, 471, 472
Chara 127
– *vulgaris* 278 ff
Chenopodium 127, 134
– *rubrum* 668
chilling 528, 530 ff
chimeric receptor 592 ff
chitin 577 ff
chitin-like glycan 577 ff
chitinase 250 ff
chitosan 91, 92, 94, 98, 100, 577 ff
– oligomers 90
Chlamydomonas 69, 73
– *reinhardtii* 69, 74, 272 ff, 343, 347 ff, 352 ff, 528 ff
Chlorella 69, 577 ff
– *ellipsoidea* 275
– *emersonii* 219 ff
– *kessleri* 577, 581
– *saccharophila* 275, 613 ff
– *sorokiniana* 71, 577, 581
– *vulgaris* 272 ff, 577, 581
chloride 546 ff
Chloris gayana 388, 390
Chlorococcales 577 ff
p-chloromercuribenzenesulfonic acid 80 ff
Chlorophyceae 577 ff
chlorophyll 77, 78, 176 ff
– a 553, 556, 558
– *a/b* ratio 475 ff
– c 69 ff
– fluorescence 31, 306, 308, 309, 311, 482, 483, 583 ff
– synthesis 490
chlorophyll-binding protein(s) 179, 180, 181
chlorophyll-deficient *xantha* mutants 490 ff
chlorophyllide 490, 492, 493, 496, 497, 499
chloroplast(s) 324 ff, 333, 337, 338, 340, 341
– composition 475 ff
– orientation movement 257 ff
– transit-peptide signals 523
chloroplastic protein-import machinery 324, 331
chlororespiration 69 ff
chlorosulfuron 17, 219, 220, 223
choline chloride 130, 131, 133
chromatin 289, 294
Cibacron blue F3G-A 296 ff
cis-acting elements 264 ff
cisplatin 514, 516, 517
citrate 49, 52, 54, 55
Citrus sinensis 450
Cladosporium cucumerinum 609
– *fulvum* 247
Clerodendrum 532
CO_2 482 ff
– assimilation 583, 587 ff
– concentrating mechanism 272, 275, 276, 352 ff, 597 ff
– concentrations, external 272 ff
– fixation kinetics 352, 353
– gas exchange 399 ff
– production 313 ff
– transport 597 ff
Coccomyxa 352 ff
coleoptile(s) 193 ff
Colletotrichum gloeosporioides 609
Commelina 127, 134
β-conglycinin 512
conifer(s) 176, 177, 181, 182
– tracheids 418 ff
copalyl diphosphate 333, 334, 339 ff
cordycepin 465, 469, 471
cotyledon expansion 233, 235, 237
– unfolding 213, 214, 216, 217
p-coumaric acid 98
crassulacean acid metabolism 667
– – – plants 374, 583
Cricomella xenoplax 543
cruciferin 157, 264 ff
Cs^+ 193, 196 ff, 456, 459, 460
Cucurbita maxima 333, 334, 339 ff
Cuscuta 362, 367
cyanide 69, 71, 72, 74, 129, 130, 132, 242, 244
– resistance 569
cyanide-resistant oxygen consumption 569
cyanide-sensitive oxidase 69 ff
cyanobacterial proteins 5
cyanobacterium(a) 147 ff, 352 ff, 476, 480, 553 ff, 597 ff
Cyclamen persicum 11 ff
cyclitol(s) 427, 430 ff
cyclohexanepentol 432
cycloheximide 468, 469, 514, 516, 519
cyclopiazonic acid 25 ff
Cyclotella cryptica 581
– *meneghiniana* 581
cytochalasin B 278, 279, 282, 283, 287, 514, 517 ff
– D 392, 394 ff
cytochrome b_5 200 ff
– C oxidase 21, 23, 77, 78
– – reductase 22, 23, 25, 26
– c_{553} 69 ff
– *f* 69 ff
– P450 632
cytokinin(s) 142, 144, 145, 301, 304, 363, 366, 367
cytorrhysis 401, 404, 406, 407
cytoskeleton 393, 397

D1-protein 176 ff, 553 ff, 589 ff
dalapon 11, 14, 15, 17
Daucus 203
– *carota* 135 ff
defense mechanisms 89
– systems 449, 454
dehydration 45, 46
– stress 39
3,4-dehydro-L-proline 514, 516, 520
dehydroascorbate 448 ff
2-deoxyglucose 156, 160
1-deoxynojirimycin 296 ff
desiccation 399 ff
detoxification of ozone 448 ff
diacylglycerol 343, 347
4′6-diamidino-2-phenylindole 292, 293
2,6-dichlorobenzonitrile 516 ff
2,4-dichlorophenoxyacetic acid 11, 14, 15, 139, 366, 367
3-(3′,4′-dichlorophenyl)-1,1-dimethylurea 71 ff, 127, 128, 130, 132, 133, 259 ff
Dictyochloropsis 407
– *reticulata* 401, 403, 404
Dictyostelium 20, 29
– *discoideum* 532, 592, 594, 595
dicyclohexylcarbodiimide 19, 25 ff
digitonin 514, 517 ff
dihydroflavonol reductase 236, 237
9,10-dihydroxystearic acid 85, 87
dimethylallyl diphosphate 54
6-dimethylaminopurine 514, 516, 519
dimethylsulfoxide 392, 394 ff
dinitrophenol 514, 516
dissolved inorganic carbon 352, 354, 356 ff
diterpenes 627, 629, 631, 632
dithiothreitol 80, 81, 430, 431, 465, 470, 472, 613, 615, 648, 649
diuron 11, 14
DNA amounts in egg and zygote nuclei 641 ff
– synthesis 641, 644
dominant negative suppression 103 ff
Drosophila 471
drought stress 428, 563 ff
Dryopteris 262
– *filix-mas* 376 ff
dulcitol 81
Dunaliella bardawil 182
– *tertiolecta* 273, 276
dwarf mutant 39 ff

Echinochloa 321
– *crus-galli* 388, 390
electrochromic absorbance change 69 ff
electron transport 482 ff
Eleusine coracana 387, 388, 390
– *indica* 385, 387, 388, 390
elicitor-induced structural responses 89 ff
Elytrigia elongata 641
embryogenesis 264 ff, 435, 436, 438 ff
– somatic 135 ff
embryogenic potential 139
embryos of pea 57 ff
end-of-day light pulse(s) 225 ff
endogenous regulatory pathway(s) 125
endoplasmatic reticulum 19, 22, 24, 25, 27 ff, 250, 255, 392, 397, 465 ff
– – membrane 200, 201
endosperm 1, 2, 4, 5, 7 ff, 84 ff, 522 ff
– mutant 522
environmental stresses 424, 425
enzyme immunoassay 156, 161
Ephedra 644
epidermal cells 127 ff, 257 ff
– growth-factor receptor 592 ff
epitopes 135 ff
epoxide hydrolase 84 ff
epoxy fatty acids 84
cis-9,10-epoxystearic acid 84 ff
Erwinia amylovora 164
Erysiphe graminis 535
erythrosin B 19, 20, 22 ff
Escherichia coli 2, 5 ff, 165 ff, 252, 334, 424, 524, 526, 592
– – *hemeA* mutant 569, 572, 573, 575
– – ribosomes 633, 638, 639
ethanol 435, 437, 438, 440
ethoxyzolamide 274, 275, 352, 354 ff, 597, 602 ff
ethylene 514, 517, 518, 569
– biosynthesis 576
ethylene-promoted abscission 442 ff
ethylenediaminetetraacetic acid 11
Eucalyptus 583, 589

exocytosis 376, 383
β-1,4-exoglucanase-gold complex 92, 96
exopolysaccharide(s) 163, 167
– synthesis 184 ff
expansion of roots 514 ff
extension-growth responses 233 ff
eyespot apparatus 343 ff

Fagus sylvatica 448 ff
far-red light 225 ff
farnesyl diphosphate 49, 51 ff
fatty-acide epoxid hydrolase 84 ff
fern spore germination, phytochrome-mediated 376
ferricyanide 613, 615, 616
fertilization 641
ferulic acid 98
fibroblast cell culture 592 ff
Ficus 586
– *insipida* 584, 587, 588
flagella 343, 346, 348, 349
Flaveria 331
– *bidentis* 387, 388, 390
– *trinervia* 385, 389 ff
flavin(s) 616
flavonoid biosynthesis 233 ff
fluorescein diacetate 378, 379
– isothiocyanate 579
fluorescence ratio 31 ff
flux control coefficients 57, 60, 61
forest trees, tropical 583 ff
Fraxinus 16
– *mandshurica* var. *japonica* 418, 420
freeze-substituted root tissue 535
fructan 385, 387
fructose 313 ff
fructose-6-phosphate 296 ff, 314, 317, 318, 321
fruit ripening 569 ff
fungal glucan 92, 94
Fusarium oxysporum 609
– – f.sp. *radicis-lycopersici* 89 ff
– – f.sp. *vasinfectum* 535 ff
– *sporotrichiodes* 640
fusicoccin 130

G-proteins 344, 349
(1→6)-β-galactan epitopes 538
galactose 514, 516
D-galactose 137, 140
gallic acid 63, 65
Garcinia mangostana 608
gas-exchange measurements 583
gelonin 639
Gelonium multiflorum 639
gene *Agp1* and *Agp2* 1, 2, 4, 5, 7, 8
– *bar* 619, 622, 623, 625
– *brittle* 2 522 ff
– cloning of alternative oxidase 571
– *cru 1* 264 ff
– expression 156, 157, 161, 184 ff, 566
– – of ADP-glucose pyrophosphorylase 1 ff
– – of α-amylase 40
– – flavonoid biosynthesis 233 ff
– – of phytochrome B 203 ff
– – salt-induced 567
– – of seed storage protein 264
– – in seeds 200
– – of ubiquitin 528 ff
– mapping 1 ff
– *psbA* 554, 559, 560
– *rab* 566
– regulation 264
– *shrunken* 2 522 ff
– *waxy* 523, 526
generative cell nucleus 289, 291 ff
Gentianaceae 608
geranyl diphosphate 49, 51 ff
geranylgeraniol 341, 627, 631
geranylgeranyl diphosphate 49, 333, 334, 336, 337, 340, 341
– pyrophosphate 627, 629 ff
germacrene 52
germination of castor bean seeds 84 ff
Giardia lamblia 528
Gibberella fujikuroi 631
gibberellic acid 39, 41 ff, 144, 303, 304, 366, 469, 472
gibberellin 301 ff, 333, 334
– biosynthesis inhibitors 39, 40, 42, 46
gibberellin-insensitive (*gai*) mutation 414 ff
gibberellin-responsive dwarf mutant 39 ff
glandular trichomes 49 ff
globulin storage protein 507, 511
Glomus mossae 544
– *versiforme* 544
(1→3)-β-D-glucan 536, 537, 542 ff
β-1,3-glucanase 255
gluconate 660 ff
δ-gluconolactone 296, 299
glucosamine 577 ff
glucose 79 ff, 156, 158, 160, 161, 313 ff, 435 ff
– oxocarbonium ion 296, 299, 300
glucose-1-phosphate 314, 317, 321, 435
glucose-6-phosphate 60, 61, 296 ff, 314, 315, 317, 318, 321
α-glucosidase 435, 437, 439
glucosylsterol transferase 21 ff
glucosyltransferase reaction 296, 299
β-glucuronidase expression 270, 271
glufosinate 619, 621 ff
glutamate 490, 492, 496 ff
glutamine 619, 621, 622, 624, 625
– synthetase 327, 328, 619 ff
glutathione 448, 449, 451 ff, 609
– reductase 422 ff
Glyceria maxima 323
Glycine max 87, 163 ff, 362 ff, 369 ff, 611
glycolaldehyde 597, 602 ff
glycolysis 314, 316, 318
glycoproteins, hydroxyproline-rich 89
glycosaminoglycan 577
glyoxylate cycle 369, 370
glyoxysomal malate dehydrogenase 369ff
glyoxysomes 84, 87, 88, 369, 370, 373
glyphosate 11, 14, 15, 17
Goldmann-Hodgkin-Katz voltage equation 669
Golgi apparatus 250, 255
Gossypium barbadense 535 ff
grain development 1, 7 ff
graviperception 392, 393, 396, 397
gravitropic response inhibitors 413
gravitropism 278, 287
gravity-sensing rhizoids 278 ff
green alga(e) 69, 73, 74, 219, 220, 262, 272 ff, 278, 343 ff, 352 ff, 399 ff, 528, 533
growth anisotropy 514 ff
– inhibition 219 ff
– – of root hair tip 672 ff
– of stem 225 ff
guaiacol 244, 245
guanosine 5′-triphosphate 345, 347 ff
guard cell(s) 193 ff
– – anion channel 193, 546 ff
– – channels 655, 656, 658 ff
gum arabic 137, 140

H^+ influx 675, 678
H^+-ATPase 193, 194, 197, 198, 546, 550, 551, 563 ff
haem protein 200
Haematococcus pluvialis 343, 349
Hansenula anomala 569, 572
HCO_3^- transport 597 ff
heat shock 528, 530 ff
– stress 465, 470, 472
heat-shock-protein 70 family 465, 468, 471
Helianthus annuus 112, 341
– *tuberosus* 440
Heracleum 77
herbicide 219 ff
– Basta 619, 622 ff
hexoploid wheat 1, 4, 5, 7, 8
hexose monophosphates 313, 314, 316, 318 ff
high-irradiance response 103, 107 ff
histones 289 ff
H_2O_2 240 ff
Hordeum distichum 641
– *vulgare* 39 ff, 156 ff, 341, 435 ff, 641, 668
– – dwarf mutant 39 ff
host-parasite system 535
host-pathogen interaction 89
humulene 52, 53
hy4 mutant 213 ff, 233 ff
hydrolase production 19
hydrotropism 410 ff
3-hydroxy-3-methylglutaryl-CoA 49, 52, 54, 55
hydroxyproline-rich glycoproteins 247, 535, 544
Hypericaceae 608
hypersensitive reaction 240 ff
hypocotyl elongation 105, 106, 108, 109
– extension 233 ff
– growth 213, 216, 217, 230
– – inhibition 107, 108, 228, 231
hypoxia 313 ff
Hypoxylon fuscum 407
hysteretic enzymes 151
– transition 152, 153

IAA-aspartate 469
imidazolinone(s) 219, 220, 223
immunoglobulin G 613 ff
immunoglobulin-binding protein cognate 465 ff
indole-3-acetic acid 142 ff, 366, 367
infection with *Fusarium* 535 ff
inhibitors of metabolism 514 ff
inositol(s) 427, 430 ff
myo-inositol 6-*O*-methyltransferase 427 ff
inositol 1,4,5-triphosphate 133
intercellular transport 250 ff
intron skipping 422, 424
inulin 13, 16, 17
invertase 437, 439
ion fluxes 672 ff
– transport 456 ff
iron nutrition 111 ff
iron(III)-reductase 111 ff
isocitrate lyase 369, 370
isopentenyladenine 145
isopentyl diphosphate 49 ff
isoprenoid(s) 49 ff
– biosynthesis 49, 50, 52, 53, 55, 56
– – inhibitor 563, 565
N-isopropyl oxalylhydroxamate 220

jasmonate(s) 156 ff, 611
jasmonate-induced proteins 156, 158 ff

jasmonic acid 156, 158 ff
– – methyl ester 156, 158 ff

K^+ channel(s) 128, 133, 193 ff, 546, 550, 551, 679
– – blocker(s) 127, 128, 131, 133, 196, 198, 459, 463
– – types 456 ff
– – voltage-dependent 193 ff
– influx 674, 675
– uptake 456, 457, 461 ff
kanamycin 326, 327
– resistance(t) 163, 164, 166, 167, 171
karyogamy 641, 642, 644
ent-kaurene biosynthesis 333 ff
– synthetase 333 ff
ent-kaurenoic acid 42
KCN 69 ff
α-ketobutyrate 219, 221 ff
α-ketoisovalerate 219, 223, 224
ketomethylvalerate 222
kinetin 366

labdenediol biosynthesis 627 ff
Lactuca sativa 646 ff
laminarin 91, 92, 94, 96, 98
laminarinase 171, 173
laser technology 278
leaf development 31 ff
– elongation 39, 40, 42, 46
– expansion 235, 237
– protein synthesis 39 ff
– senescence 443, 444, 446
leghemoglobin 167, 168, 173, 184, 185, 189
Lemanea mamillosa 360
Lemna 263, 625
– *minor* 219
Lepidium sativum 392 ff
Leucaena leucocephala 189
leucine aminopeptidase 157
leucoplast(s) 50, 55, 56, 333, 340
lichens 399 ff
light environment acclimation 306 ff, 475 ff
– of low-fluence-rate 257 ff
light-harvesting complex(es) 306, 553
– – of PSII 176, 178 ff, 306, 311, 475 ff
light-induced membrane potential changes 127 ff
– photoinhibition 32, 37
lignin 89, 100, 101, 535
Ligustrum 653
Lilium 376, 383
– *longiflorum* 289 ff, 376
Limnobium stoloniferum 672 ff
limonene 52, 53
lipid peroxidation 240, 242, 247
lipoxygenase 157, 241, 246
Lithospermum erythrorhizon 611
Lobaria pulmonaria 399, 401, 403, 404, 406 ff
long-day plants 33 ff
Lotus japonicus 638
Lovastatin 514, 516, 563, 565, 566
low-affinity K^+ uptake 456, 457, 461, 463
low-fluence-rate light 257 ff
low-temperature stress 176, 563, 646
low-temperature-stimulated nonphotochemical quenching 646
Lupinus 16
lutein 176, 180, 181, 588
Lycopersicon esculentum 89 ff, 135, 137, 203 ff, 225 ff, 563 ff
– – mutant *sitiens* 563 ff
lysophosphatidylcholine 79

malate 324, 329, 331, 546 ff
– dehydrogenase 338 ff, 369 ff
– synthase 369 ff
male gametic nucleus-specific histones 289 ff
maleic hydrazide 11, 13 ff
malic enzyme 385, 387 ff
maltose 435 ff
Mangifera indica 569 ff
mangrove species 647
mannitol 156, 158, 160
– transport 76 ff
manool 627, 629
α-mannosidase 509
Marah macrocarpus 333, 334, 340
marine cyanobacterium 597 ff
Medicago sativa 435
meiotin-1 289
membrane damage 240, 246
– potential 456, 458 ff
– – changes, light-induced 127 ff
– transport systems 81
memory enzymes 151
Mentha x *piperita* 49 ff
menthone 51 ff
2-mercaptoethanol 292
Mesembryanthemum crystallinum 427, 431, 433
mesophyll cells 127 ff
Mesotaenium 262
metallothionein-like protein 442 ff
[^{35}S]methionine 39, 43, 45
methionine sulfoximine 514, 516, 517
methotrexate 514, 516
2-methyl-4-chlorophenoxyacetic acid 11, 14, 15
1D-4-*O*-methyl-*myo*-inositol 427, 430 ff
methyl-jasmonate-treated cell cultures 608 ff
methyltransferases 430 ff
mevalonate 334, 338 ff
mevalonic acid 52 ff
– – pathway 49, 51 ff
mevinolin 52, 53, 514, 516
Michaelis-Menten kinetics 24
microfibrils 418, 420, 421
microspores 435 ff
microtubule(s) 514 ff
– cortical 418 ff
– inhibitor 515, 516
Mimulus 442
– *guttatus* 445, 446
moisture gradient(s) 410, 412, 413
monensin 514, 517 ff
Monstera deliciosa 37
monoclonal antibody 135, 137, 138, 140, 465 ff
monocotyledon-dicotyledon evolution 324, 331
Monoraphidium braunii 613
monoterpene biosynthesis 49 ff
morphogenic characteristics of phytochrome mutants 142 ff
moss phytochrome 592 ff
Mougeotia 262
movement protein 118 ff
Musa cavendishii 313 ff
mutant(s), *ageotropum* of *Pisum* 410 ff
– *albina* 498
– of *Arabidopsis* 213 ff, 301 ff
– *argenteum* 127, 129, 130, 134
– embryos *r* and *rb* 57 ff
– *gai* of *Arabidopsis* 414 ff
– gibberellin-responsive 39 ff
– *hy4* 213 ff, 233 ff
– *phA* 213 ff
– *phB* 213 ff
– photomorphogenic 475, 476
– phytochrome 142 ff
– phytohormone 301
– *sitiens*, ABA-deficient 563 ff
– symbiotic 163 ff
– temperature-sensitive 528, 529, 531 ff
– Tn5 of *Rhizobium* 184 ff
– vicilin proteins 501 ff
– *xantha*, chlorophyll-deficient 490 ff
mutation, *gas1-1* 414 ff
myo-inositol 6-*O*-methyltransferase 427 ff
myosin light-chain kinase 617
Myrothamnus 362

NaCl 156, 158, 160, 161
$NADP^+$-glyceraldehyde 3-phosphate dehydrogenase 337 ff
$NADP^+$-isocitrate dehydrogenase 327, 328
$NADP^+$-malate dehydrogenase 324 ff
NADPH-protochlorophyllide oxidoreductase 492 ff
Nannochloropsis 359
α-naphthalene acetic acid 144, 145
naphthalene-1-acetic acid 546, 548 ff
naphthalene-2-acetic acid 546, 550, 551
β-naphthaleneacetic acid 366
1-naphthylacetic acid 469, 470
naphthylphthalamic acid 469
napin 157, 264
neomycin phosphotransferase II gene 105
neoxanthin 180, 588
Nephroma resupinatum 407
Nernst potential 193 ff
Neurospora 20, 29, 515, 616
Nicotiana glutinosa 627 ff
– *plumbaginifolia* 142 ff, 250 ff
– *sylvestris* 250 ff
– *tabacum* 103 ff, 118 ff, 200 ff, 225 ff, 250, 264, 324 ff, 379, 422 ff, 465, 501 ff, 668
nicotinic acid 64, 65
nigericin 24, 648, 649, 651
Nitella 128, 132
nitrate 19, 24, 27, 29
– reductase, plasma-membrane-bound 613 ff
– uptake 613 ff
nitrogen fixation 184, 185, 189, 191
nitrogen-fixing root nodules 362
nitrogenase activity 167, 168, 172 ff
NO_3-sensitive ATPase 77, 78
nodule(s), differentiation 163 ff
– of *Glycine* 163 ff
– of *Trifolium* 184 ff
nonphotochemical quenching of PSII chlorophyll fluorescence 646 ff
nonradiative energy dissipation 646 ff
norstictic acid 401
Nostoc 353
nucleosomes 289

O_2 evolution 583 ff, 597, 599 ff
oil-seeds 200, 202
okadaic acid 343, 345, 346, 349, 615, 617
D-ononitol 427, 430 ff
optical tweezers 278 ff
orientation movement of chloroplasts 257 ff
Oryza sativa 103 ff
– – rab16A gene 271
oryzalin 516 ff
osmotic stress 156 ff, 563
overexpression of phytochrome A 103 ff
oxalate 19, 25, 27 ff
oxaloacetate 84, 324, 329, 331
oxamyl 11
oxidase, alternative 569 ff
oxidative pentose-phosphate pathway 314, 316, 318, 321

– stress 448, 454
oxygen evolution 307, 308, 310 ff
– species 240 ff
ozone detoxification 448 ff

paclobutrazol 42 ff, 301, 304
Panicum maximum 388, 390
– *miliaceum* 388, 390
papillae 535
Paramecium 679
partition coefficient 11, 15, 17
partitioning of photosynthate 385 ff
Pasteur effect 313
patch-clamp experiments 457
– technique 193
pathogen infection 89
pathogenesis-related protein 443, 446
pectic components 535 ff
pectin 89, 92, 96, 100, 101, 535, 540, 541, 543, 544
Pellicularia sasakii 362
Peltigera aphthosa 352, 359
Pelvetia 678
peribacteroid membrane 164, 169, 174
Pernospora tabacina 627
peroxidase 240, 241, 244 ff
– activity 169, 171 ff
peroxisomes 241, 243
petiole extension 233 ff
Petunia 435
phaseolin 471, 511
β-phaseolin gene 270
Phaseolus 173, 189
– *coccineus* 341
– *vulgaris* 31 ff, 237, 240 ff, 544
phenolic-like compounds/substances 89, 90, 98, 100
phenylalanine ammonia-lyase 157, 608 ff
phloem 76 ff
– path 11 ff
– transport 11, 16, 17, 111
phloem-mobile signal 111, 112, 115
Phoma betae 609
phosphatase activities 343, 345, 349
– inhibitors 343, 345, 346, 349
– uptake system 147 ff
phosphatidylserine 343, 347
phosphinithricin 619 ff
– acyl transferase 619, 622, 623, 625
phosphoenolpyruvate carboxykinase 385, 387 ff
– carboxylase 163, 168, 169, 173, 324, 331
phosphoenolpyruvic acid 52 ff
3-phosphoglycerate 1, 5
phosphoinositide pathway 679
phosphotungstic acid 78
photobiont(s) 353, 359, 360, 399 ff
photoconversion 103, 104, 108
photoinhibition 31 ff, 176 ff, 528, 531, 533, 553 ff, 583 ff
photomorphogenesis 213, 214, 237
photomorphogenic changes in gametophytes 376
– mutants 475, 476
photon flux density 31 ff, 483 ff, 554, 555, 559, 586 ff
– receipt, daily 31 ff
photoprotection 177, 182
photoreceptor 233, 236 ff, 257, 258, 262, 475 ff
– systems 258, 259, 262
photorespiration 482, 483, 485, 487 ff
photosynthate partitioning and storage 385 ff
photosynthesis 31 ff, 352 ff, 399, 401 ff, 482 ff, 553, 554, 558, 559
– inhibitor(s) 257, 259
– steady-state 597 ff
photosynthetic function 306 ff
– membrane 490, 496, 498
– O_2 evolution 583 ff
– pigment(s) 257 ff, 583, 584, 588, 590
– stoichiometry 306
photosystem I 69, 71, 72, 74, 306 ff
– II 31, 32, 35, 37, 176 ff, 306 ff, 482, 485 ff, 553 ff, 583, 584, 587 ff, 646, 647, 650 ff
– stoichiometry 307, 309, 311, 475 ff
phototaxis 343
phototropism 63, 66
phyA mutant 213 ff
phyB mutant 213 ff
phycobilisome(s) 553 ff
phycocyanin 553, 557 ff
Phycomyces blakesleeanus 63 ff
– *uvi* mutations 63 ff
Physcomitrella 205
phytoalexin(s) 612
– biosynthesis 247
phytochrome 213 ff, 235 ff, 257 ff, 471, 472, 475 ff
– A 103 ff, 142, 203 ff, 225 ff
– B 103, 104, 108, 109, 142, 203 ff, 213 ff
– C 203 ff
– D 203 ff
– E 203 ff
– genes 225
– of moss 592 ff
– mutants 142 ff, 214, 225, 232
phytochrome-mediated fern spore germination 376
phytohormone(s) 160, 161, 362 ff
– mutants 301
phytol 49
Phytolacca americana 633, 638
phytopathogenic fungi 609
Phytophthora megasperma f.sp. *glycinea* 89, 94, 96, 609
pigment composition in *Pinus* 176 ff
pinitol 364, 365
D-pinitol 427, 428
Pinus sylvestris 176 ff
Pisum 13, 16
– *sativum* 57 ff, 111 ff, 127 ff, 333, 334, 341, 431, 501, 544
– – mutant *ageotropum* 410 ff
Pithophora oedogonia 581
plant defense reactions 163, 169, 171, 173
– growth regulators 465, 469, 471, 472
– transformation 619, 624
Plantago maritima 668
– *media* 462, 668
plasma membrane 19, 21, 22, 24, 25, 27 ff, 392, 393, 397, 456 ff, 465 ff, 546, 547
– – polarization 193
– – vesicles 76 ff
plasmodesmal size exclusion limit 118 ff
plasmodesmata 118, 119, 124, 125, 535 ff
plastids 49, 333 ff
– from embryos 57, 60, 61
plastocyanin 69, 70, 72
plastoquinone 69, 72 ff
Pleurochloris meiringensis 69 ff
Plumbago 294
Podospora curvicolla 407
pokeweed antiviral protein 633, 638, 639
pollen 289 ff
– mother-cell protein 289
– tubes 376, 379, 383
polyethyleneglycol 156, 158, 160, 161
polygalacturonic acid 535, 539, 540, 543
polyhydroxybutyric acid 169, 171, 173
Populus euramericana 420
potential(s), intracellular 392 ff
Poterioochromas stipitata 581
prolyl hydroxylation 250 ff
promoter deletion analysis 264 ff
protein bodies 501, 502, 504, 506
– kinase 343, 344, 346, 347, 349, 350, 617
– – activity 592 ff
– – inhibitors 613, 615
– phosphatase inhibitors 613, 615, 617
– phosphorylation/dephosphorylation 343 ff
– synthesis 39 ff, 272 ff
protein-import machinery, chloroplastic 324, 331
proteinase inhibitor 156, 157, 161
proteolytic processing of proteins 501 ff
protochlorophyllide 490, 492 ff
proton-pumping ATPase 127, 128, 133
protonophores 19, 20, 22, 24, 27, 29
protoporphyrin IX 494, 497, 498
Prunus ilicifolia 648
Pseudevernia furfuracea 399, 401 ff
Pseudomonas aeruginosa 424
– *syringae* pv. *phaseolicola* 240 ff
pulegone 52, 53
pyrophosphate : fructose-6-phosphate phosphotransferase 313, 322, 323
pyruvate 313 ff
pyruvic acid 49, 52 ff
Pythium ultimum 100, 609

quinidine 456, 460

Ramalina maciformis 399, 401, 402, 407
Rb^+ 193, 196, 198
– influx 456, 457, 462, 463
reproductive growth 112, 114
respiration 313, 321
retention coefficient 11, 14, 15, 17
rhamnogalacturonan I 535, 541, 543
Rhizobium 189, 543
– *leguminosarum* bv. *phaseoli* 189
– – bv. *trifolii* Tn5 mutant 184 ff
– – bv. *viciae* mutants 189
– *meliloti* 164
Rhizoctonia solani 362, 639
rhizoid(s) of *Anemia* 376 ff
– of *Chara* 278 ff
– of *Dryopteris* 376 ff
– growth 376 ff
Rhizopus oligosporus 609
rhodopsin 344, 349
ribosome-inactivating protein(s) 156, 633 ff
ribulose-1,5-bisphosphate 482, 487, 488
– carboxylase-oxygenase (Rubisco) 272, 274,, 275, 306, 310, 352 ff, 475 ff, 482, 483, 485, 487 ff, 597 ff, 619, 620, 622, 625
Riccia fluitans 668
ricin 633, 636, 637, 639
Ricinus 321, 340
– *communis* 84 ff, 200, 445, 633
ripening bananas 313 ff
RNA N-glycosidases 633, 635, 637 ff

root cap 410 ff
– cells 456 ff
– expansion 514 ff
– hair tip growth 672 ff
– iron (III)-reductase 111 ff
– nodules 184 ff, 362 ff
– statocytes 392 ff
– tissues, infected 89, 90, 96, 100
root-to-shoot ratio(s) 118, 124, 125
rooting 142, 143, 145

Saccaromyces cerevisiae 89, 94, 96, 370, 373, 374, 530
– – ribosomes 633, 635, 636, 638
salicylhydroxamic acid 69, 72, 73
salinity 563, 567
Salix 583, 589
– *fragilis* 420
Salmonella typhimurium 223
salt stress 427, 428, 563, 564
Salvia sclarea 627
Sambucus nigra 442 ff
Saponaria officinalis 633
Sauromatum guttatum 569 ff
Scenedesmus obliquus 272, 356, 359
Scirpus olneyi 488
sclareol biosynthesis 627 ff
Sedum album 454
seed(s) of castor bean 84 ff
– iron nutrition 111 ff
– storage proteins 501, 502, 509, 511, 512
– of tobacco 200 ff
seedlings from wheat 333 ff
Selaginella 262
Septoria nodorum 609
sesquiterpene biosynthesis 49 ff
shade-avoidance response 475, 476
shade-tolerance response 475, 476, 480, 481
shikimate oxidoreductase 337 ff
shoot regeneration 301 ff
shoot-to-root communication 111, 112, 115
shooting 142
short-day plants 33 ff
sieve element/companion cell complex 76 ff, 118, 124
signal transduction 414, 417
– – blue-light stimulation 613 ff
– – phytochrome-dependent 595
silique test 492
Sinapis 237
sodium vanadate 613, 615, 617
Solanum lycopersicon 203 ff
– *tuberosum* 198
somatic embryogenesis 135 ff
sorbitol 80 ff, 156, 158 ff, 410 ff
sorbitol-stressed tissue 158, 159
Sorbus 16
Sordaria fimicola 407
Sorghum 182
– *bicolor* 388 ff
– *vulgare* 324 ff
source-sink system 11
Spermatozopsis similis 343 ff
Spinacia oleracea 296, 448 ff
sporangiophores 63 ff
sporopollenin 440
Staphylococcus aureus 289, 291
starch 314, 316, 320, 364, 365, 367, 385 ff
– accumulation 185, 189
– biosynthesis 522
– – pathway 1
– breakdown 313 ff
– grains 522 ff
– synthase 57, 60, 61
– synthesis 57 ff, 315, 316, 320, 321
starch-branching enzyme 57 ff
statocytes 392 ff
statoliths 278 ff, 392, 393, 396
staurosporine 613, 615, 617
steady-state photosynthesis 597 ff
stem extension 233 ff
– growth 225 ff
sterol(s) 49, 50, 55
– biosynthesis 53
stomatal opening 546, 550, 551
storage of photosynthate 385 ff
– protein(s) 501, 502, 507, 509, 511, 512
– – gene(s) 264, 270, 271
Streptococcus sobrinus 300
Streptomyces hygroscopicus 362
streptomycin 585, 589
stress(es) 433, 528 ff, 563, 567
– abiotic 427
– dehydration 39
– drought 428, 563 ff
– environmental 424, 425
– heat 465, 470, 472
– low temperature 176, 181, 563, 647
– osmotic 156 ff, 563
– oxidative 448, 454
– response 528 ff
– salt 427, 428, 563, 564
– water 399, 400, 407, 408
– winter 176, 177, 180, 181
suberin 89
succinate 84
succinic acid 51
sucrose 11 ff, 156, 158, 160, 161, 313 ff, 364, 365, 367, 385 ff, 435 ff
– density gradients 19 ff
– synthesis 313, 314, 316, 320, 321
– transport 76 ff
sucrose-phosphate synthase 296 ff
sulfometuron methyl 219 ff
sulfonylurea herbicides 219, 220, 223
superoxide dismutase 240 ff
SV-type channels 655 ff
Swietenia 585 ff
– *macrophylla* 586 ff
symbiosome(s) 169
– membranes 174
symbiotic bacterium - plant interactions 184
– mutants 163 ff
symplasm 448 ff
synchronous culture of *Chlorella* 221
Synechococcus leopoliensis 147, 605
– sp. PCC7942 553 ff, 598, 602 ff
– strain PCC7002 597 ff
– UTEX625 602, 605
Synechocystis 6, 7, 9

taproot channels 655, 656
Teloschistes lacunosus 399, 401 ff
temperature stress, low 176, 181
temperature-induced photoinhibition 32, 37
temperature-sensitive cell-cycle mutant 528, 529, 531 ff
terpene cyclase(s) 627, 630, 632
tetcyclacis 42, 43
tetraethylammonium 127, 128, 130, 131, 456, 459, 460, 463, 660 ff
– chloride 547, 548
Tetrahymena 293
tetraphenyl boron 259
tetrapyrroles 490, 498
Thalassiosira fluviatilis 581
thiol 422
thiolase(s) 369 ff
thiophosphorylation 343, 348
thioredoxin system 652
threonine deaminase 157
thylakoid(s) 69 ff
– membrane 147, 154, 272 ff
tip growth 278 ff
tissue differentiation in nodules 163 ff
– metabolic status 619 ff
tobacco mosaic virus 633
– – – coat protein 124
– – – movement protein 118 ff
– seedlings, transgenic 103 ff, 225 ff
– transgenic 118 ff, 254, 324 ff, 501 ff
tomato seedlings, transgenic 225 ff
tonoplast 19, 21, 22, 24, 28, 29
tracheids of conifers 418 ff
Tradescantia 127, 134, 644
transgenic petunia 511, 512
– plants 619, 625
– tobacco 118 ff, 254, 324 ff, 501 ff
– – seedlings 103 ff, 225 ff
– – seeds 265, 266
– tomato seedlings 225 ff
transport coefficient 11, 14 ff
transposon Tn*phoA* 163 ff
Trebouxia 353, 404, 407
trehalase 362 ff
trehalose 362 ff
triazolopyrimidine sulfonamide 514, 516
– sulfonanilides 219, 223
Trichoderma reesi 639
trichomes of *Nicotiana glutinosa* 627 ff
trifluoperazine 343, 347, 349, 655, 665, 667
trifluoroacetic acid 577, 578, 580
Trifolium pratense 184
Triticum aestivum 1 ff, 19 ff, 225, 333 ff, 482 ff, 633 ff
tritin 633 ff
tropical forest trees 583 ff
tropism 63 ff
– blue and ultraviolet 63, 66, 67
trypsin 333, 338, 339
tunicamycin 465, 470, 472
Typha angustifolia 323
tyrosine phosphorylation 594, 595

ubiquitin 528 ff
UDPglucose 296 ff
ultraviolet C radiation 63 ff
Ulva 263
uranyl acetate 78
urea 506, 507
Urochloa panicoides 388, 390
Uromyces vicia-fabae 543
– *vignae* 544
ursolic acid 161

vacuolar chitinase 250 ff
vacuolar-lysosomal compartment 655 ff
vacuole(s) 250 ff, 501, 502, 504, 506, 508 ff
validamycin A 362 ff
valinomycin 24
Vallisneria gigantea 257 ff
– *spiralis* 262
vanadate 19 ff, 343, 345, 346, 349
vanadate-sensitive ATPase 76 ff
vascular bundle(s) 11 ff
Vaucheria 262, 263
Verticillium rexianum 609
vesicle secretion 514 ff
Vicia faba 79, 87, 193, 443, 448 ff, 546 ff, 655 ff
– *hirsuta* 189
vicilin 501 ff
Vigna umbellata 427 ff

– *unguiculata* 362 ff, 668
Vinca minor 431
violaxanthin 32, 177, 180, 181, 588, 590, 646 ff
voltage-dependent K^+ channel 193 ff

wall appositions 89, 92, 94, 96, 98, 100, 101, 535 ff
water potential 410 ff
– stress 399, 400, 407, 408
– vapour uptake 399 ff
winter stress 176, 177, 180, 181

xanthone(s) 608 ff
– biosynthesis 608, 610 ff
Xanthophyceae 69 ff
xanthophyll(s) 176, 177, 180 ff, 307, 310, 588, 651
– cycle 583, 584, 588, 590, 591, 647, 653
– – pigments 588, 590, 651
– pool 31
xenobiotics 11 ff
Xenopus oocytes 511
xyloglucan(s) 535 ff

Yariv reagent 137
Yarrowia lipolytica 373, 374
yeast-extract-treated cell cultures 608 ff

Zea 16
– *mays* 37, 193 ff, 341, 388, 390, 465 ff, 522 ff, 623, 641 ff, 678
zeatin 144, 145, 469
zeaxanthin 32, 176, 177, 180 ff, 583, 584, 588, 590, 591, 647 ff
Zygomycete 63